

WHAT IS CLAIMED IS:

1. A synthetic polypeptide substantially corresponding in amino acid residue sequence to at least a portion of the sequence of a naturally occurring proteinoid and having a molecular weight equal to less than that of said proteinoid, said proteinoid containing an amino acid residue sequence that is translated from a messenger RNA present substantially only in brain cells, said synthetic polypeptide, when bound to a carrier as a conjugate and introduced as said conjugate into an animal, inducing the production of antibodies that bind to said naturally occurring proteinoid or a derivative thereof.
2. The synthetic polypeptide of claim 1 wherein said messenger RNA is polyadenylated.
3. The synthetic polypeptide of claim 1 wherein said synthetic polypeptide contains at least about six amino acid residues
4. The synthetic polypeptide of claim 1 wherein said naturally occurring proteinoid is neuroactive.
5. The synthetic polypeptide of claim 1 wherein said synthetic polypeptide is neuroactive.
6. The synthetic polypeptide of claim 1 wherein said messenger RNA translated into said naturally occurring proteinoid is present at a concentration of less than about 2 percent by weight of said cytoplasmic messenger RNA of the brain.
7. The synthetic polypeptide of claim 1 wherein said messenger RNA translated into said naturally occurring proteinoid is present at a concentration of less than about 0.2 percent by weight of said cytoplasmic messenger RNA of the brain.

8. The synthetic polypeptide of claim 1 wherein said messenger RNA translated into said naturally occurring proteinoid is present at a concentration of less than about 0.01 percent by weight of said cytoplasmic messenger RNA of the brain.

9. The synthetic polypeptide of claim 1 wherein said synthetic polypeptide has an amino acid residue sequence, as represented by a formula below, from left to right and in the direction from amino-terminus to carboxy-terminus, said sequence being selected from the group consisting of

- (a) CIPEGLESYYTEQ
- (b) RSVSPWMSVLSEE
- (c) NVTESPSFSAGDNPHVLYSPEFRISGAPDKYESE;
- (d) LLGLRGEPPELDLSYSHSDLG;
- (e) PTKDSYTLTEELA EYAEIRVK;
- (f) LGSERRLLGLRGEPPELDLSYSHSDLG;
- (g) LLGLRGEPPELDLSYSHSDL-NH₂; and
- (h) LGSERRLLGLRGEPPELDLSYSHSDL-NH₂.

10. The synthetic polypeptide of claim 1 wherein said messenger RNA is located in cytoplasm.

11. A method of assaying for the presence of a naturally occurring amino acid residue sequence of a brain cell proteinoid in a sample of brain cell tissues that comprises the steps of

- (a) preparing a synthetic polypeptide substantially corresponding in amino acid residue sequence to the amino acid residue sequence of at least a portion of a naturally occurring proteinoid and having a molecular weight equal to less than that of said proteinoid, said proteinoid containing an amino acid residue sequence that is translated from a messenger RNA present substantially only in brain cells;

(b) introducing said synthetic polypeptide alone or as a conjugate bound to a carrier into an animal to induce in said animal production of antibodies to said synthetic polypeptide;

5 (c) harvesting the antibodies induced to said synthetic polypeptide;

(d) assaying for the presence of said naturally occurring proteinoid amino acid residue sequence by admixing an aliquot from a sample of
10 brain tissue with said harvested antibodies or idiotypic-containing polyamide portions of said antibodies in the presence of a group that indicates the formation of an immune reaction.

12. The method of claim 11 wherein said
15 messenger RNA is polyadenylated.

13. The method of claim 11 wherein said naturally occurring proteinoid is neuroreactive.

14. A diagnostic system for assaying the presence of a naturally occurring amino acid residue
20 sequence present in at least a portion of a proteinoid present in brain cells by the formation of an immune reaction comprising at least one package containing biologically active receptors, said receptors comprising antibodies or
25 idiotypic-containing polyamide portions of antibodies raised to a synthetic polypeptide or a conjugate of that synthetic polypeptide bound to a carrier, said synthetic polypeptide having an amino acid residue sequence substantially corresponding to an amino acid
30 residue sequence of at least a portion of a naturally occurring proteinoid and having a molecular weight equal to less than that of said proteinoid, said proteinoid containing an amino acid residue sequence that is translated from a messenger RNA present
35 substantially only in brain cells, said receptors

forming an immune reaction with a proteinoid or derivative of a proteinoid containing said naturally occurring amino acid residue sequence when admixed with brain tissue.

5 15. The diagnostic system of claim 14 further including a group that indicates the formation of an immune reaction.

10 16. The diagnostic system of claim 15 wherein said indicating group is packaged separately from said receptor.

15 17. A pharmaceutical composition containing as an active ingredient an effective amount of a synthetic polypeptide substantially corresponding in amino acid residue sequence to at least a portion of the amino acid residue sequence of a naturally occurring proteinoid and having a molecular weight equal to less than that of said proteinoid, said proteinoid containing an amino acid residue sequence that is translated from a messenger RNA present
20 substantially only in brain cells, said synthetic polypeptide when bound to a carrier as a conjugate and introduced as said conjugate into an animal inducing production of antibodies that bind to said naturally occurring proteinoid or a derivative
25 thereof, said composition also containing a pharmaceutically acceptable diluent.

30 18. The pharmaceutical composition of claim 17 wherein said synthetic polypeptide is present as a lipophilic pro-polypeptide derivative that is capable of passage from the blood stream through the blood-brain barrier and into brain cell tissues.

35 19. The pharmaceutical composition of claim 17 wherein said synthetic polypeptide has an amino acid residue sequence as represented by a formula

below, from left to right and in the direction from amino-terminus to carboxy-terminus, said sequence being selected from the group consisting of

- (a) NVTESPSFSAGDNPHVLYSPEFRISGAPDKYESE;
- (b) LLGLRGEPPELDLSYSHSDLG;
- (c) LGSERLLGLRGEPPELDLSYSHSDLG;
- (d) LLGLRGEPPELDLSYSHSDL-NH₂; and
- (e) LGSERLLGLRGEPPELDLSYSHSDL-NH₂

20. A method for determining whether animal's brain tissue has been injured by the formation of an immune reaction comprising the steps of

(a) providing cerebrospinal fluid from an animal suspected of having a brain tissue injury, said cerebrospinal fluid containing a proteinoid or proteinoid derivative released from injured brain tissue when an injury to said tissue has occurred;

(b) admixing an aliquot of said cerebrospinal fluid with effective amounts of (i) a biologically active receptor and (ii) an indicating group, said receptor comprising an antibody or idio-type-containing polyamide portion of an antibody that is raised to a synthetic polypeptide or a conjugate of that synthetic polypeptide bound to a carrier, said synthetic polypeptide having an amino acid residue sequence substantially corresponding to an amino acid residue sequence of a naturally occurring proteinoid or proteinoid derivative and having a molecular weight equal to less than that of said proteinoid, said proteinoid or proteinoid derivative containing an amino acid residue sequence that is translated from a messenger RNA present substantially only in cells of brain tissue; and

(c) assaying said admixture for the presence of an immune reaction between said

proteinoid or proteinoid derivative in said cerebrospinal fluid and said receptor, the presence of an immune reaction being indicated by said indicating group, and said immune reaction being indicative of an injury to brain tissue.

21. The method of claim 20 wherein said proteinoid or proteinoid derivative is present in neurons and dendritic processes in the brain.

22. The method of claim 20 wherein said synthetic polypeptide has an amino acid residue sequence as represented by a formula below, from left to right and in the direction from amino-terminus to carboxy-terminus, said sequence being selected from the group consisting of

- (a) CIPEGLSYYTEQ
- (b) RSVSPWMSVLSEE
- (c) NVTESPSFSAGDNPHVLYSPEFRISGAPDKYESE;
- (d) LLGLRGEPPELDLSYSHSDLG;
- (e) PTKDSYTLTEELAEYAEIRVK;
- (f) LGSERRLLGLRGEPPELDLSYSHSDLG;
- (g) LLGLRGEPPELDLSYSHSDL-NH₂; and
- (h) LGSERRLLGLRGEPPELDLSYSHSDL-NH₂.

23. A biologically active receptor that immunologically reacts with brain cell tissue comprising an antibody or an idiotype-containing polyamide portion of an antibody raised to a synthetic polypeptide or a conjugate of that synthetic polypeptide bound to a carrier, said synthetic polypeptide having an amino acid residue sequence substantially corresponding to an amino acid residue sequence of at least a portion of a naturally occurring proteinoid and having a molecular weight equal to less than that of said proteinoid, said proteinoid containing an amino acid residue sequence that is translated from a messenger RNA present

substantially only in cells of brain tissue, said receptor forming an immune reaction when admixed with brain cell tissue including said naturally occurring proteinoid or a derivative thereof.

5 24. The receptor of claim 23 wherein said synthetic polypeptide has an amino acid residue sequence as represented by a formula below, from left to right and in the direction from amino-terminus to carboxy-terminus, said sequence being selected from
10 the group consisting of

- (a) CIPEGLESYTEQ
- (b) RSVSPWMSVLSEE
- (c) NVTESPSFSAGDNPHVLYSPEFRISGAPDKYESE;
- (d) LLGLRGEPPELDLSYSHSDLG;
- 15 (e) PTKDSYTLTEELAEYAEIRVK;
- (f) LGSERRLLGLRGEPPELDLSYSHSDLG;
- (g) LLGLRGEPPELDLSYSHSDL-NH₂; and
- (h) LGSERRLLGLRGEPPELDLSYSHSDL-NH₂.

20 25. The receptor of claim 24 wherein said proteinoid or proteinoid derivative is located on the surface of said specific brain tissue cells.

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